

HEADQUARTERS, FORT MONMOUTH, NEW JERSEY
INFORMATION OFFICE
Public and Technical Information Division
Tel. Liberty 2-4000 Ext. 22553

Release No. 581
19 December 1958

FOR IMMEDIATE RELEASE:

SATELLITE COMMUNICATIONS RELAY SYSTEM IN ATLAS

FORT MONMOUTH, N. J. -- The orbiting communications relay inside the Atlas missile now circling the earth is a first step toward "courier" Satellites for military communications, the Department of the Army announced today.

The communications payload provided by the Army consists primarily of transmitting, receiving, and recording equipment which are designed to receive stored or relay messages from ground stations. When in range of these stations the orbiting relay can receive and transmit seven (7) written messages and one (1) voice message at one time.

To obtain stored messages from the communications relay in the Atlas, a ground station triggers off the relay transmitter by electronic command. As long as the Satellite courier is in range the ground station can also transmit its own message for relay to another station. Messages can be relayed from one station to another without storage.

The project, including the launching and communications payload provided by the Army, was conducted under the auspices of the Advanced Research Projects Agency, directed by Roy W. Johnson. It is called PROJECT SCORE; SCORE is an abbreviation for Signal Communications By Orbiting Relay Equipment. The Army contribution was developed by the Army Signal Corps in cooperation with the Astro-Electronics Products Division of the Radio Corporation of America, Princeton, N. J., and other firms.

HL SPACE (12) (MORE)

The orbiting communications relay was installed inside the Atlas, using the missile itself as the carrier. The relay consists primarily of two transmitters, two receivers, and two recorders using erasable loops of magnetic tape. The total payload, including antennas, is about 150 pounds. The transmitter produces 8-watts of power and uses zinc-silver oxide batteries with an estimated life of four to six weeks. Solar cells, which were successfully converted for Satellite uses by the Army Signal Corps for the Vanguard program, were not used because of the expected short life of the huge Atlas Satellite in orbit.

The courier Satellite communications system includes four ground stations. They are located at Fort Huachuca, the Army Electronic Proving Grounds; Fort Sam Houston, Texas; Fort Stewart, Georgia, and another near Los Angeles, California. Messages destined for the communications relay in the Atlas can be fed to these ground stations over standard links. Teletypewriter dispatches and a voice message would be transmitted to the Satellite courier when it comes within range in its pass.

The ground stations are similar. Each consists essentially of five standard trucks, in which the communications and other equipment is mounted. Antenna array is a separate unit. The multiplexing equipment at the ground stations can handle up to 60 words a minute on each teletypewriter channel, or a total of 420 words a minute, plus a voice communication. The recorder in the communications relay can store about 1,600 telegraphic words in its four minute storage capacity.

Satellite communications relay shows promising advantages in helping to solve the growing traffic jam in the radio wave spectrum in ground-to-ground

military communications. The system also suggests a means of eventually using Satellite relays to store large amounts of messages, carry them thousands of miles, and release them on call to ground stations around the world.

The major part of the Satellite communications relay design and construction was done at the U. S. Army Signal Research and Development Laboratory, Fort Monmouth, N. J., in conjunction with the Radio Corporation of America. Other contributing companies were Eagle-Pitcher Lead Co.; Potter Brunfield, Convair Astronautics Division of General Dynamics; Radiation, Inc., and Radio Frequency Laboratories. The ground stations were designed and built by the U. S. Army Signal Research and Development Laboratory and are manned by Army Signal Corps personnel.
